

WHAT IS CLAIMED IS:

1. A differential pumping system comprising:
a first chamber for storing a light source
5 that emits light;
a second chamber that receives light from the
first chamber; and
a vacuum pump, provided between said first
and second chambers, which includes a hollow shaft
10 through which the light passes, and exhausts the hollow
shaft.
2. A differential pumping system according to
claim 1, wherein a wall surface of the hollow shaft has
15 an aperture, which has a vane section and exhausts gas
molecules outside the shaft.
3. A differential pumping system according to
claim 1, wherein said vacuum pump includes a vane that
20 rotates in the hollow shaft.
4. A differential pumping system according to
claim 1, further comprising:
a first exhaust unit for exhausting said
25 first chamber; and

a second exhaust unit for exhausting said second chamber, wherein pressure of the second chamber is lower than that of the first chamber.

5 5. A differential pumping system according to claim 1, wherein the light is collimated and the hollow shaft has a cylindrical shape.

10 6. A differential pumping system according to claim 1, wherein the light is condensed, and the hollow shaft is so tapered that a side of the first chamber is narrower than that of the second chamber.

15 7. A differential pumping system according to claim 1, further comprising another vacuum pump for exhausting an atmosphere to the outside which has been exhausted by the vacuum pump provided between said first and second chambers.

20 8. A differential pumping system according to claim 1, wherein the light is EUV light.

25 9. An exposure apparatus comprising:
 a differential pumping system that includes a first chamber for storing a light source that emits light, a second chamber that receives light from the first chamber, and a vacuum pump, provided between the first and second chambers, which includes a hollow

shaft through which the light passes, and exhausts the hollow shaft;

an illumination optical system that introduces the light to a mask that forms a circuit
5 pattern to be transferred onto an object; and
a projection optical system that introduces the light from the mask onto the object,
wherein said illumination optical system and projection optical system are installed in the second
10 chamber.

10. A measurement system comprising:

a differential pumping system that includes a first chamber for storing a light source that emits
15 light, a second chamber that receives light from the first chamber, and a vacuum pump, provided between the first and second chambers, which includes a hollow shaft through which the light passes, and exhausts the hollow shaft;

20 a light intensity measuring apparatus for measuring light intensity from an object to be measured;

an illumination optical system that introduces the light to the object; and

25 a measurement optical system that introduces the light from the object to said light intensity measuring apparatus,

wherein said light intensity measuring apparatus, illumination optical system and measurement optical system are installed in the second chamber.

5 11. A device fabrication method comprising the step of:

 exposing an object to be exposed, using an exposure apparatus; and

 performing a predetermined process for the
10 object exposed,

 wherein an exposure apparatus includes:

 a differential pumping system that includes a first chamber for storing a light source that emits light, a second chamber that receives light from the
15 first chamber, and a vacuum pump, provided between the first and second chambers, which includes a hollow shaft through which the light passes, and exhausts the hollow shaft;

 an illumination optical system that
20 introduces the light to a mask that forms a circuit pattern to be transferred onto an object; and

 a projection optical system that introduces the light from the mask onto the object,

 wherein said illumination optical system and
25 projection optical system are installed in the second chamber.